

A STUDY OF APPLICATION OF UNMANNED AERIAL SYSTEMS IN CONSTRUCTION PROJECTS

Final Project Report

as one of requirement to obtain S1 degree of

Universitas Atma Jaya Yogyakarta

By:

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**INTERNATIONAL CIVIL ENGINEERING PROGRAM
DEPARTMENT OF CIVIL ENGINEERING
FACULTY OF ENGINEERING
UNIVERSITAS ATMA JAYA YOGYAKARTA
YOGYAKARTA**

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APPROVAL

Final Project

A STUDY OF APPLICATION OF UNMANNED AERIAL SYSTEMS IN CONSTRUCTION PROJECTS

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Has been approved

Yogyakarta, *23 July 2018*...

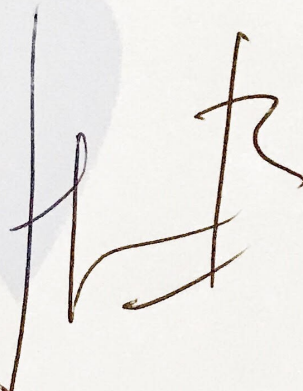
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STATEMENT

I signed below stating that the final project with title:

“A STUDY OF APPLICATION OF UNAMNNED AERIAL SYSTEMS IN CONSTRUCTION PROJECTS”

It is the result of my own work and not a result of plagiarism of other people's work. Ideas, research data, and quotes directly or directly derived from the writings or ideas of others expressly provided in this Final Project. If it is proved later that this Final Project is the result of plagiarism, which I get the certificate would be canceled and I will return to the Rector of Universitas Atma Jaya Yogyakarta.

Yogyakarta, 23 July 2018.

Who made the remarks,



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APPROVAL

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APPROVAL EXAMINER

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A STUDY OF APPLICATION OF UNMANNED AERIAL SYSTEMS IN CONSTRUCTION PROJECTS



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“Use your highest strengths and talents to belong to and serve something you believe is larger than the self”

(Martin E.P. Seligman)

“People who have meaning in their lives, in the form of clearly defined purpose, rated their satisfaction with life higher”

(Emily Esfahni Smith)

“There’s a theory that says that life is based on a competition and the struggle and the fight for survival, and it’s interesting because when you look at the fractal character of evolution, it’s totally different. It’s based on cooperation among the elements in the geometry and not competition” (Bruce Lipton)

“Don’t wait until everything is just right. It will never be perfect. There will always be challenges, obstacles and less than perfect conditions. So what. Get started now. With each step you take, you will grow stronger and stronger, more and more skilled, more and more self-confident and more and more successful” (Mark Victor Hansen)

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I realize, this report has some mistakes. Therefore I accept any form of suggestion for further improvement. Finally, I hope this report may be useful for the reader. Thank you.

Yogyakarta, July 2018

The Author

Gregorius Edwin Yonathan

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ABSTRACT

A STUDY OF APPLICATION OF *UNMANNED AERIAL SYSTEMS* IN CONSTRUCTION PROJECTS, Gregorius Edwin Yonathan, Student Number 13.13.15057, year of 2018, Construction Management, Civil Engineering International Program, Faculty of Engineering, Universitas Atma Jaya Yogyakarta.

Unmanned aerial vehicles, commonly known as drones, are a growing technology in all sorts of industries. In spite of studies exploring potential applications of unmanned aerial systems (UASs), the particular perception use and value of visual assets (photographs or video) collected with UASs for construction management tasks is not well understood. This paper presents an exploratory case study to identify applications of visual assets obtained from UASs and conventional for construction management tasks. The main of this case study is a better understanding of the use of UASs for construction management tasks and cost implications.

In this study, construction project applied of unmanned aerial systems (UASs) supervisory is a half from the total respondent (50%) and the rest is still with the conventional supervisory in Yogyakarta and Jakarta. Survey result of UASs application 2016 - 2017 for safety monitoring, aerial photography to track job progress have an increasing 40% of the application usage and inspection of difficult areas increasing 20% along with a good report supervisory in their business.

From the result of data analysis showed most potential applications of UASs mainly for track job progress monitoring, evaluating safety monitoring and support (K3), and inspection of difficult areas. In addition, an analysis UASs (drone) is more cost-effective financing rather than conventional supervisory. The average percent to total wage project supervisory UASs and conventional is 0,212 %. Then conventional supervisory more expensive with the average percent to total wage 0,450 %. Differences between both method significant high competitive expenses, with the average percent to total wage amount 0,24 %. Appears that group statistics total worker wage conventional supervisory higher than UASs & conventional supervisory ($0,44960 > 0,21160$). These result indicate that UASs and conventional supervisory really does have an effect on total worker wage supervisory. It was found that high means is spend more total worker wage from the total amount of staff (expensive), meanwhile result means have low mean (small). It was found that small mean is spend more less total worker wage from the total amount of staff (more cost-effective financing).

Key Words: Construction Management, Drones, Supervisory Cost, Unmanned Aerial Systems (UASs).